



March 17, 2016

Town of Ipswich, Massachusetts  
Purchasing Office  
25 Green Street  
Ipswich, MA 01938

TO: Prospective Bidders

RE: Addendum No. 3  
Town of Ipswich, MA  
“Linebrook Road Improvement Project”

### **ADDENDUM NO. 3**

This Addendum No. 3 to the above referenced projects modifies, corrects and/or supplements the original Contract Documents dated February 2016 and shall become part of the Contract Documents.

All bidders are required to acknowledge receipt of the Addendum in Section 00300A – FORMS FOR GENERAL BID; failure to do so may subject the bidder to disqualification.

This Addendum consists of six (6) pages, with forty-five (45) pages of Attachments and twenty-four (24) Plan sheets.

#### **Changes to Plans:**

Replace Sheets C-4, C-9, C-10, C-12, C-17, C-23, C-24, C-27, C-28, C-30, C-31, C-32, and D-2 with the attached Sheets C-4A, C-9A, C-10A, C-12A, C-17A, C-23A, C-24A, C-27A, C-28A, C-30A, C-31A, C-32A, and D-2A.

All plans shall be considered part of the plan set with Massachusetts professional engineering stamp on Sheet G-1 dated February 10, 2016.

Electronic copies of Sheets C-5, C-6, C-7, C-8, C-19, C-20, C-21, C-26, C-29, C-33, C-34 are also attached for reference to illustrate the topographic contours which are easier to distinguish on electronic copies than hard copies. No changes have been made.

#### **Changes to Bidding and Contract Documents:**

#### **Section 00300 FORMS FOR GENERAL BID**

Replace Section 00300 (Pages 1–21) with the attached Section 00300A (Pages 1-23)

## **Section 01150 MEASUREMENT AND PAYMENT**

Page 01025-27,

Add the following paragraphs for Item No. 47 and Item No. 48:

### Item No. 47 – Furnish and Install New Stormwater Treatment Device Structures

#### **A. Measurement**

Measurement for payment will be based on the actual number of new stormwater treatment device structures installed complete, as approved and measured by the Engineer.

#### **B. Payment**

Payment for Item No. 47 – Furnish and Install New Stormwater Treatment Device Structures shall be based on the unit price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to furnish and install new stormwater treatment device structures complete as indicated on the Drawings and as specified or as directed by the Engineer. The work includes all items included in this Section's Paragraph 1.1B, above, as well as completing test pit to verify pipe depth and siting location prior to ordering the structure; installing crushed stone base with geotextile mat as required; furnishing and installing new stormwater treatment device structures sized appropriately for 24-inch pipe connections with approximate pipe invert depths of 6-feet (+/- 1-foot) and allowing for storage volume below invert per manufacturers requirements, complete with structure, internal baffles, screens if required, stainless steel fittings, masonry and castings, and all appurtenances; connection to new or existing pipes, backfill, compaction; startup, and testing; providing manufacturer's O&M manual for Town use; furnishing and installing new frames and covers, connecting to existing or proposed pipes with rubber sleeves, modification of pipes as required to make connections, fittings as required; concrete, bricks, and mortar to raise frames to proposed grade per details; concrete collars; startup and testing, removal and replacement of existing subbase with 6-inch minimum thickness of new gravel subbase within disturbed areas, and all incidental work not included for payment elsewhere. Test pit will be measured for payment under Bid Item 2. Furnishing and delivering new cast iron frames and covers for the stormwater treatment device structures will not be measured for payment under Bid Item 22.

### Item No. 48 – Furnish and Install New Stormwater Treatment Device Inserts

#### **A. Measurement**

Measurement for payment will be based on the number of the stormwater treatment device inserts furnished and installed in new or existing catch basins as directed and measured and approved by the Engineer.

#### **B. Payment**

Payment for Item No. 48 – Furnish and Install New Stormwater Treatment Device Inserts shall be based on the unit price bid for this item in the proposal. Under the Unit Price bid for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to furnish and install stormwater treatment device inserts complete, as indicated on the Drawings and as specified or as directed by the Engineer. The work includes all items included in this Section's Paragraph 1.1B, above, as well as cleaning debris from catchbasins or manholes with vactor and disposal of cleaning debris; plugging pipes or pumping to de-water structure if required; modifying masonry or structure in vicinity of opening to facilitate installation of stormwater treatment device inserts; measuring structure opening size and dimensions to facilitate ordering appropriately sized and configured device insert, furnishing and

delivering stormwater treatment device insert (StormPod by ACF or equal) in accordance with specifications, installing insert in accordance with specifications and manufacturer's recommendations; recording pre and post photographs identifying structure ID number for reference, and all incidental work not included for payment elsewhere.

## **Section 02253 STORMWATER TREATMENT DEVICES**

Add the attached specification Section 02253 (Pages 02253-1 to 02253-7):

### **Additional Information and Responses to Bidders Questions:**

*Q1) Spec section 01010.1.5.A states that a sedimentation tank is required where high groundwater is anticipated. No borings were provided. Where should we anticipate high groundwater? Is it possible to add an item for providing a tank?*

A1) Discharge of construction dewatering to the sanitary sewer system will not be allowed. Construction dewatering water to be infiltrated to the point of origin need not be treated. Should dewatering activities be required where the Contractor needs to discharge groundwater to a location other than the point of origin, then the Contractor shall be prepared to store, treat, and discharge the water in accordance with applicable permits and regulations. At a minimum, provisions of the local Construction Dewatering Permit, EPA NPDES stormwater general permit for construction activities including construction site dewatering and stormwater pollution prevention plan, and the local Conservation Commission Order of Conditions. Contractor shall note that portions of the project are within the Zone A boundary of the Outstanding Resource Water (ORW), specifically Bull Brook, as shown on revised plans. Contractor shall account for this incorporate of Contractor is responsible for the cost of permits and treatment including tank if required. Approval of a dewatering plan by the Conservation Commission Agent is required prior to beginning construction and implementing dewatering plan in each area.

High groundwater should be anticipated within the entire project area at variable depths, and construction dewatering should be anticipated in all areas where excavation depth exceeds 3-feet, and at lesser depths for work within buffer zones to the wetland resource areas and Zone A boundary as shown on revised plans. Construction dewatering also required to address water from cut water pipes and leaking valves.

*Q2) Spec section 01025.1.1.B states that we need to include costs for characterization, testing, filtration, and treatment if required of construction dewatering water. Water testing is further discussed on spec section 02210.3.II. Do you have an environmental report? How is the contractor to determine appropriate coverage? Will this project require a Remediation General Permit (RGP)? If testing as listed in 02210.3.II is required please provide us more information regarding frequency of tests. Also, refer back to comment regarding no borings. What area should we anticipate groundwater? It is difficult to provide a fair and accurate price for work that may not even happen.*

A2) The Town does not have an environmental report. It is not anticipated that a RGP will be required. Refer to A1) above.

*Q3) Spec section 01025.1.1B states to submit a rodent control plan and to perform rodent control. Do you have a specification for this work?*

A3) A rodent control plan is not required, requirement for rodent control plan in Section 01025 can be deleted.

*Q4) Spec section 01025.1.1B lists requirement for preconstruction videos and photos and construction photos. Can you provide more information on this requirement? Do we need to do videos and photos? If*

*so, how many and of what format for the photos? As far as construction photos, what is the frequency format/quality of photos required.*

A4) Digital video required before work begins of entire road surface, and edge or road features including but not limited to sidewalks, grass strips, driveways, poles, signs, mailboxes, walls, landscaping, plantings, and existing valve boxes. Digital video required after erosion and sedimentation (E&S) barriers are installed to document the location of E&S barriers installed and locations of existing wetland flagging. Quality to be sufficient to document existing condition of all features and any damage or existing cracking. Still digital photos to be provided to document all work prior to backfill, including but not limited to plugs installed in existing pipes and connections made between existing and proposed pipes or structures. Still photos to be included in work associated with measurement and payment of each work item, and must be of sufficient quality to provide unobstructed, in-focus observation of all work, fittings, and bedding by the engineer to determine if the work is satisfactory and will be measured for payment. Videos and photos shall be labeled with location and date and submitted with two copies of each on portable memory stick.

*Q5) Will the contractor have to pay for water provided by the Town for construction use (i.e. dust control, cleaning of drain lines, water testing, paving)?*

A5) Contractor will be required to coordinate with Town on hydrant use, and provide a backflow preventer and water meter to measure water used. Contractor will not have to pay for water used.

*Q6) Will a dewatering plan stamped by a Professional Engineer be required? They typically need borings to provide these plans.*

A6) Refer to A1) above.

*Q7) Specification section 02210.3.4D states that compaction tests are required for every 5 cubic yards in trenches. Please confirm this requirement.*

A7) This requirement is confirmed. Once compaction work plan is submitted, and compaction means and methods that match the plan demonstrate that required compaction is being achieved (demonstrated through required compaction tests), the Engineer will consider request from the Contractor to modify the requirement moving forward.

*Q8) Please confirm that temporary pavement will be required every day.*

A8) This requirement is confirmed. Once construction has proceeded long enough for the Town to be satisfied with the condition of the trenches with regard to cut edges, compaction, dust, and traffic; the Engineer will consider request from the Contractor to modify the requirement moving forward. In areas delineated on the plans for future "Mill and Overlay", Town will consider modifying the requirement to allow for placement of permanent pavement instead of temporary pavement, providing contractor will maintain trenches through warranty period and address pavement degradation or settlement and replace degraded/settled pavement at no cost to the Town.

*Q9) Note 19 on Plan Sheet G-2 states that Contractor is to survey existing rim and invert to determine proposed design. Do you have data/elevations on existing system? Will we be replacing to similar elevations? Can you provide a depth range that we should anticipate drain lines to be so we can properly price the work?*

A9) Rim elevations and topographic contours provided on plans for reference (Refer to "Changes to Plans:" section of this Addenda above).

The majority of the existing drain pipes are 4-feet deep (+/- 1-foot). In some areas existing drain pipe depths range from (5 to 7)-feet deep (+/- 1-foot) including but not limited to segments of drain on Sheets C-6, C-9A, C-12A, C-17A, C-27A, C-28A, C-29, C-30A, C-33. Contractor is encouraged to complete field investigation to confirm the depths of existing drain structures. The intent is to install new drains at similar elevations to existing drains, adjusted as necessary to avoid utility conflicts, based on field survey

of existing rims and inverts by the Contractor following raising buried drain manholes and exploratory excavations as required.

*Q10) Sheet C-6 includes repairing a section of 12-inch drain. Can you provide us with an approximate depth of this drain?*

A10) Approximate depth of the drain in the vicinity of the repair is 6-feet (+/- 1-foot), Contractor to complete CCTV pipeline inspection of this pipe segment as directed and confirm the limits, location, and depth of the spot repair prior to beginning construction.

*Q11) No elevations on plans. What is the depth we should assume for all drain pipes and structures. It would be fair if all bidders were bidding on same conditions instead of all of us making different assumptions.*

A11) Refer to A9) above. For bidding purposes, Contractor should assume that the majority of proposed catch basins will be 7-feet deep to sumps (+/- 1-foot) unless field conditions and/or test pits require construction of smaller diameter, and/or shallower basins; and that the majority of proposed drain manholes will be 5-feet deep (+/- 1-foot).

*Q12) Cutting in gate valves in hydrants in areas where existing water main is to remain in place will require numerous shut downs and interruptions in service. (Unless temporary water bypass is run for length of entire project). Please clarify where water bypass is required and not required. Why is temporary water bypass required if new main is not installed in existing trench?*

A12) Work identified as "Replace fire hydrant and 6" gate valve as directed (by others)." On the plans are not included in this contract. This work is identified on the plans for permitting review. Limits of temporary water bypass is shown on plans and in specifications attachment. Water work outside these limits before or after bypass is established will require coordinated shutdown with Town and distribution of service interruption notices.

*Q13) Are existing drainage structures block, brick, stone?*

A13) The majority of structures are constructed of concrete block, with a few structures constructed of brick, concrete, or granite blocks. Corbels or risers are constructed of various masonry materials. Contractor is encouraged to complete field investigation to confirm the materials of drain structures.

#### Additional Information and Requirements:

Contractor shall conform to all requirements of the draft Order of Conditions (General Conditions, Pages 5 of 12 through 9 of 12) and Special Conditions (Pages 1 to 10) from MassDEP and the Ipswich Conservation Commission which are attached to this Addenda.

Contractor shall not store any equipment or materials within any areas under jurisdiction of Conservation Commission, including areas within the Zone A boundary of the Outstanding Resource Water (ORW), specifically Bull Brook, as shown on revised plans.

Proposed 8 or 12-inch HDPE or PVC drain pipe identified on the plans (Bid Items 11 and 13) to be replaced with proposed 8 to 12-inch DI drain pipe (Bid Item 12) as directed by Engineer.

Work shown on the plans identified as "By Others" is not intended to be completed as part of this work. The work was included in the plan set for permitting review and to provide future locations of roadway and sidewalk for consideration when installing or adjusting castings or structures.

Drain related work shown on the plans identified as “May be Completed by Others” (on C-19 for example) may be completed by the Ipswich DPW before, during, or after contract period; or may be completed as part of this work if the Ipswich DPW decides not to complete the work.

Contract requires placement of temporary pavement on a regular basis and replace with permanent pavement. Refer to A8) above.

Once construction has proceeded long enough for the Town to be satisfied with the condition of the temporary pavement with regard to cut edges, pavement joints, pavement condition, settlement, and traffic; the Town will consider modifying the paving requirements in areas delineated on the plans for future “Road Reclamation”, and allow temporary pavement to remain in place without removal and replacement with permanent pavement.

Similar to high groundwater, unsuitable soils should be anticipated within the entire project area at variable depths, in particular within, but not limited to, all work areas within buffer zones to the wetland resource areas and Zone A boundary as shown on revised plans.

Stormwater treatment device structures and inverts require approval by the Conservation Commission if approved equal manufacturers or products are proposed by the Contractor. Contacts for manufacturer’s representatives are provided for informational purposes:

ACF – Lee Jones (508-745-7052) and Rick Fotino (603-339-7131)

Contech – Melissa Hall (207-885-6114)

## SECTION 00300A

### BID

To the Town of Ipswich, herein called the Owner, acting by and through its Purchasing Agent, for the Linebrook Road Improvement Project

The Undersigned, as bidder, herein referred to as singular and masculine, declares as follows:

- (1) The only parties interested in this BID as Principals are named herein;
- (2) This BID is made without collusion with any other person, firm, or corporation;
- (3) No officer, agent, or employee of the Owner is directly or indirectly interested in this BID;
- (4) He has carefully examined the site of the proposed Work and fully informed and satisfied himself as to the conditions there existing, the character and requirements of the proposed Work, the difficulties attendant upon its execution and the accuracy of all estimated quantities stated in this BID, and he has carefully read and examined the Drawings, the annexed proposed AGREEMENT and the Specifications and other Contract Documents therein referred to and knows and understands the terms and provisions thereof;
- (5) He understands that information relative to subsurface and other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) has been furnished only for his information and convenience without any warranty or guarantee, expressed or implied; that the subsurface and/or other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) actually encountered may not be the same as those shown on the Drawings or in any of the other Contract Documents; and he agrees that he shall not use or be entitled to use any such information made available to him through the Contract Documents or otherwise, or obtained by him in his own examination of the site, as a basis of or ground for any claim against the Owner or the Engineer arising from or by reason of any variance which may exist between the aforesaid information made available to or acquired by him and the subsurface and/or other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) actually encountered during the construction work, and he has made due allowance therefore in this BID;
- (6) and he understands that the quantities of work tabulated in this BID or indicated on the Drawings or in the Specifications or other Contract Documents are only approximate and are subject to increase or decrease as deemed necessary by the Engineer; and he agrees that, if this BID is accepted he will contract with the Owner, as provided in the copy of the Contract Documents deposited in the office of the Engineer, this BID form being part of said Contract Documents, and that he will perform all the work and furnish all the materials and equipment, and provide all labor, services, plant, machinery, apparatus, appliances, tools, supplies and all other things required by the Contract Documents in the manner and within the time therein prescribed and according to the requirements of the

Engineer as therein set forth, and that he will take in full payment therefore the lump sum or unit price applicable to each item of the Work as stated in the schedule below.

- (7) and he understands that the Owner reserves the right to decrease the scope of the work to be done under this Contract and to delete any work in order to bring the cost within available funds or for any other reason in the best interest of the Owner. To this end, the Owner reserves the right to reduce the quantity of any items, and/or delete entire items as set forth in the BID, either prior to executing the Contract or any time during the progress of the work. The Owner further reserves the right, at any time during the progress of the work, to restore all or part of any items previously deleted or reduced. Exercise by the Owner of the above rights shall not constitute any ground or basis of claim for damages or for anticipated profits on the work reduced or deleted.

The scope of work that may be reduced or eliminated specifically includes, but is not limited to:

- Item No. 8 – Light Cleaning and CCTV (12-24)-inch Drain Pipe or Culverts
- Item No. 9 – Heavy Cleaning (12-24)-inch Drain Pipe or Culverts
- Item No. 10 – Slipline Existing Culverts with HDPE or PVC Pipe and Grout
- Item No. 14 – Furnish and Install (18 to 24)-inch HDPE or PVE Drain Pipe or Culverts,  
All Depths
- Item No. 18 – Construct/Reconstruct Masonry Headwalls or Splash Pads
- Item No. 22 – Furnish and Deliver New Manholes or Catch Basin Castings
- Item No. 27 – Furnish and Install Polyethylene Encasement for 8-inch Water Main
- Item No. 30 – Furnish and Install (10 to 12)-inch Gate Valves
- Item No. 31 – Furnish and Install (6 to 8)-inch Linestops or Insertion Valves
- Item No. 44 – Stripping and Disposing Existing Pavement, Sidewalk, Curb, and  
Subbase Materials
- Item No. 45 – Furnish and Install Gravel Subbase
- Item No. 47 – Furnish and Install Stormwater Treatment Device Structures
- Item No. 48 – Furnish and Install Stormwater Treatment Device Inserts

(Note: Bidders must bid on each item. All entries in the entire BID must be made clearly and in ink. In case of discrepancy between prices in writing and in figures; the writing shall govern. In case of discrepancy between the product obtained by multiplying the estimated quantity by the unit price, and the extended amount, the product obtained shall govern. In case of discrepancy between total of extended amounts and total amount of bid stated, total of items shall govern. Use the pages in this document when submitting proposal and submit contract documents intact).

Refer to Section 01025 - Measurement and Payment for Item Descriptions.



**Bid Schedule:**

Item No.	Unit	Description	Unit Price (in figures)	BASE (Column A)		ALTERNATE 1 (Column B)	
				Estimated Quantity	Extended Total (in figures)	Estimated Quantity	Extended Total (in figures)
<b>1</b>	LS	Mobilization/Demobilization (Not to exceed 5% of Eligible Base Subtotal)  _____ Dollars  And _____ Cents per Lump Sum	\$ _____	<b>1</b>	\$ _____	<b>N/A</b>	<b>N/A</b>
<b>2</b>	CY	Exploratory Excavation  _____ Dollars  And _____ Cents Per Cubic Yard	\$ _____	<b>800</b>	\$ _____	<b>50</b>	\$ _____
<b>3</b>	CY	Earth Excavation and Refill Below Normal Depth  _____ Dollars  And _____ Cents Per Cubic Yard	\$ _____	<b>500</b>	\$ _____	<b>50</b>	\$ _____
<b>4</b>	CY	Rock Excavation (Minimum)  _____ Sixty _____ Dollars  _____ Zero _____ Cents Per Cubic Yard	<b><u>\$ 60.00</u></b>	<b>500</b>	<b><u>\$ 30,000.00</u></b>	<b>50</b>	<b><u>\$3,000.00</u></b>

Item No.	Unit	Description	Unit Price (in figures)	BASE (Column A)		ALTERNATE 1 (Column B)	
				Estimated Quantity	Extended Total (in figures)	Estimated Quantity	Extended Total (in figures)
5	CY	Additional Rock Excavation (Additional)					
		_____ Dollars And _____ Cents Per Cubic Yard	\$ _____	500	\$ _____	50	\$ _____
6	DAYS	Variable Programmable Message Boards					
		_____ Dollars And _____ Cents Per Day	\$ _____	150	\$ _____	N/A	N/A
7	LF	Install, Maintain and Remove Erosion and Sedimentation Barrier					
		_____ Dollars And _____ Cents per Linear Foot	\$ _____	3,250	\$ _____	N/A	N/A
8	LF	Light Cleaning and CCTV (12 to 24)-inch Drain Pipe or Culverts					
		_____ Dollars And _____ Cents per Linear Foot	\$ _____	400	\$ _____	N/A	N/A

Item No.	Unit	Description	Unit Price (in figures)	BASE (Column A)		ALTERNATE 1 (Column B)	
				Estimated Quantity	Extended Total (in figures)	Estimated Quantity	Extended Total (in figures)
9	LF	Heavy Cleaning (12 to 24)-inch Drain Pipe or Culverts  _____ Dollars  And _____ Cents per Linear Foot	\$ _____	250	\$ _____	N/A	N/A
10	LF	Slipline Existing Pipe or Culverts with HDPE or PVC Pipe and Grout  _____ N/A _____ Dollars  And _____ N/A _____ Cents per Linear Foot	N/A	N/A	N/A	N/A	N/A
11	LF	Furnish and Install (6 to 8)-inch HDPE or PVC Drain Pipe or Services, All Depths  _____ Dollars  And _____ Cents per Linear Foot	\$ _____	100	\$ _____	N/A	N/A
12	LF	Furnish and Install (8 to 12)-inch Ductile Iron Drain Pipe, All Depths  _____ Dollars  And _____ Cents per Linear Foot	\$ _____	500	\$ _____	N/A	N/A

Item No.	Unit	Description	Unit Price (in figures)	BASE (Column A)		ALTERNATE 1 (Column B)	
				Estimated Quantity	Extended Total (in figures)	Estimated Quantity	Extended Total (in figures)
13	LF	Furnish and Install (12 to 15)-inch HDPE or PVC Drain Pipe or Culverts, All Depths  _____ Dollars  And _____ Cents per Linear Foot	\$ _____	2,550	\$ _____	N/A	N/A
14	LF	Furnish and Install (18 to 24)-inch HDPE or PVC Drain Pipe or Culverts, All Depths  _____ Dollars  And _____ Cents per Linear Foot	\$ _____	200	\$ _____	N/A	N/A
15	EA	Remove and Dispose or Abandon Structures  _____ Dollars  And _____ Cents per Each	\$ _____	8	\$ _____	N/A	N/A
16	EA	Core Connect to Existing Pipe or Structures  _____ Dollars  And _____ Cents per Each	\$ _____	50	\$ _____	N/A	N/A

Item No.	Unit	Description	Unit Price (in figures)	BASE (Column A)		ALTERNATE 1 (Column B)	
				Estimated Quantity	Extended Total (in figures)	Estimated Quantity	Extended Total (in figures)
17	VF	Reconstruct Sewer or Drain Structures					
		_____ Dollars And _____ Cents per Vertical Foot	\$ _____	120	\$ _____	N/A	N/A
18	SF	Construct/Reconstruct Masonry Headwall or Splash Pad					
		_____ Dollars And _____ Cents per Square Foot	\$ _____	550	\$ _____	N/A	N/A
19	VF	Install New Precast Concrete Manholes or Catch Basins					
		_____ Dollars And _____ Cents per Vertical Foot	\$ _____	300	\$ _____	N/A	N/A
20	EA	Modify Existing Drain Structure, Install Hood or Trash Guard					
		_____ Dollars And _____ Cents per Each	\$ _____	4	\$ _____	N/A	N/A

Item No.	Unit	Description	Unit Price (in figures)	BASE (Column A)		ALTERNATE 1 (Column B)	
				Estimated Quantity	Extended Total (in figures)	Estimated Quantity	Extended Total (in figures)
21	EA	Remove, Raise or Adjust, and Reset Manhole or Catch Basin Castings  _____ Dollars  And _____ Cents per Each	\$ _____	20	\$ _____	N/A	N/A
22	EA	Furnish and Deliver New Manhole or Catch Basin Castings  _____ Dollars  And _____ Cents per Each	\$ _____	45	\$ _____	N/A	N/A
23	EA	Furnish and Install Brick and Mortar Plugs in Pipes Larger than 8-inch Diameter  _____ Dollars  And _____ Cents per Each	\$ _____	30	\$ _____	N/A	N/A
24	LF	Furnish and Install 6-inch Ductile Iron Water Pipe  _____ Dollars  And _____ Cents per Linear Foot	\$ _____	250	\$ _____	50	\$ _____

Item No.	Unit	Description	Unit Price (in figures)	BASE (Column A)		ALTERNATE 1 (Column B)	
				Estimated Quantity	Extended Total (in figures)	Estimated Quantity	Extended Total (in figures)
25	LF	Furnish and Install 8-inch Ductile Iron Water Pipe  _____ Dollars And _____ Cents per Linear Foot	\$ _____	3,500	\$ _____	1,000	\$ _____
26	LF	Furnish and Install (10 to 12)-inch Ductile Iron Water Pipe  _____ Dollars And _____ Cents per Linear Foot	\$ _____	15	\$ _____	5	\$ _____
27	LF	Furnish and Install Polyethylene Encasement for 8-inch Water Main  _____ Dollars And _____ Cents per Linear Foot	\$ _____	1,750	\$ _____	500	\$ _____
28	EA	Furnish and Install 6-inch Gate Valves  _____ Dollars And _____ Cents per Each	\$ _____	8	\$ _____	2	\$ _____

Item No.	Unit	Description	Unit Price (in figures)	BASE (Column A)		ALTERNATE 1 (Column B)	
				Estimated Quantity	Extended Total (in figures)	Estimated Quantity	Extended Total (in figures)
29	EA	Furnish and Install 8-inch Gate Valves  _____ Dollars And _____ Cents per Each	\$ _____	20	\$ _____	5	\$ _____
30	EA	Furnish and Install (10 to 12)-inch Gate Valves  _____ Dollars And _____ Cents per Each	\$ _____	1	\$ _____	0	\$ _____ 0
31	EA	Furnish and Install (6 to 8)-inch Linestops or Insertion Valves  _____ Dollars And _____ Cents per Each	\$ _____	1	\$ _____	0	\$ _____ 0
32	EA	Furnish and Install Restrained Caps  _____ Dollars And _____ Cents per Each	\$ _____	4	\$ _____	1	\$ _____



Item No.	Unit	Description	Unit Price (in figures)	BASE (Column A)		ALTERNATE 1 (Column B)	
				Estimated Quantity	Extended Total (in figures)	Estimated Quantity	Extended Total (in figures)
33	LF	Furnish and Install 1-inch Copper Service Pipe  _____ Dollars	\$ _____	1,400	\$ _____	400	\$ _____
		And _____ Cents per Linear Foot					
34	LF	Furnish and Install 1 1/2-inch Copper Service Pipe  _____ Dollars	\$ _____	50	\$ _____	0	\$ _____ 0
		And _____ Cents per Linear Foot					
35	LF	Furnish and Install 2-inch Copper Service Pipe  _____ Dollars	\$ _____	50	\$ _____	0	\$ _____ 0
		And _____ Cents per Linear Foot					
36	EA	Remove and Stack Hydrants  _____ Dollars	\$ _____	7	\$ _____	1	\$ _____
		And _____ Cents per Each					

Item No.	Unit	Description	Unit Price (in figures)	BASE (Column A)		ALTERNATE 1 (Column B)	
				Estimated Quantity	Extended Total (in figures)	Estimated Quantity	Extended Total (in figures)
37	EA	Furnish and Install Hydrants  _____ Dollars And _____ Cents per Each	\$ _____	7	\$ _____	1	\$ _____
38	EA	Remove Existing Valve Boxes, Restore Area  _____ Dollars And _____ Cents per Each	\$ _____	12	\$ _____	4	\$ _____
39	LS	Furnish, Install, Maintain, and Remove 4-inch and 2-inch Temporary Water Bypass  _____ Dollars And _____ Cents Per Lump Sum	\$ _____	1	\$ _____	0	\$ _____ 0
40	EA	Install, Maintain, Remove Buried Service Connections for Temporary Water Bypass  _____ Dollars And _____ Cents Per Each	\$ _____	5	\$ _____	1	\$ _____

Item No.	Unit	Description	Unit Price (in figures)	BASE (Column A)		ALTERNATE 1 (Column B)	
				Estimated Quantity	Extended Total (in figures)	Estimated Quantity	Extended Total (in figures)
41	SY	2-inch Temporary Bituminous Concrete					
		_____ Dollars And _____ Cents per Square Yard	\$ _____	3,000	\$ _____	500	\$ _____
42	SY	4-inch Permanent Bituminous Concrete					
		_____ Dollars And _____ Cents per Square Yard	\$ _____	3,000	\$ _____	500	\$ _____
43	TON	3-inch Hand Placed Bituminous Concrete					
		_____ Dollars And _____ Cents per Ton	\$ _____	50	\$ _____	5	\$ _____
44	SY	Stripping and Disposing Existing Pavement, Sidewalk, Curb, and Subbase Materials					
		_____ Dollars And _____ Cents per Square Yard	\$ _____	750	\$ _____	0	\$ 0

Item No.	Unit	Description	Unit Price (in figures)	BASE (Column A)		ALTERNATE 1 (Column B)	
				Estimated Quantity	Extended Total (in figures)	Estimated Quantity	Extended Total (in figures)
45	CY	Furnish and Install Gravel Subbase					
		_____ Dollars And _____ Cents per Cubic Yard	\$ _____	250	\$ _____	0	\$ _____ 0
46	SY	Furnish and Install Loam and Seed					
		_____ Dollars And _____ Cents per Square Yard	\$ _____	1,000	\$ _____	50	\$ _____
<b>SUBTOTALS</b> <i>(Bid Items 1-46)</i>				\$ _____ <i>Base Bid</i>		\$ _____ <i>Alternate 1 Bid</i>	

## ALTERNATE 2

Item No.	Unit	Description	Unit Price (in figures)	Alternative 2 (Column C)	
				Estimated Quantity	Extended Total (in figures)
<b>47</b>	EA	Furnish and Install Stormwater Treatment Device Structures  <div style="text-align: right;">_____ Dollars</div> <div style="text-align: right;">And _____ Cents</div> per Each	\$ _____	<b>2</b>	\$ _____
<b>48</b>	EA	Furnish and Install Stormwater Treatment Device Inserts  <div style="text-align: right;">_____ Dollars</div> <div style="text-align: right;">And _____ Cents</div> per Each	\$ _____	<b>2</b>	\$ _____
<b>SUBTOTALS</b> <i>(Bid Items 47-48)</i>				<div style="text-align: right;">\$ _____</div> <div style="text-align: right;"><i>Alternate 2 Bid</i></div>	

**TOTAL 1 - (Base Bid):** Base Bid Subtotals  
(Sum of Extended Totals: Column A )

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(Amount in Words)

\$

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(Amount in Figures)

**TOTAL 2 - (Base Bid PLUS Alternate 1):** Base Bid and Alternate 1 Bid Subtotals  
(Sum of Extended Totals: Column A + Column B)

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(Amount in Words)

\$

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(Amount in Figures)

**TOTAL 3 - (Base Bid PLUS Alternate 2):** Base Bid and Alternate 2 Bid Subtotals  
(Sum of Extended Totals: Column A + Column C)

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(Amount in Words)

\$

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(Amount in Figures)

**TOTAL 4 - (Base Bid PLUS Alternate 1 PLUS Alternate 2):** Base Bid and Alternate 1 Bid and  
Alternate 2 Subtotals  
(Sum of Extended Totals: Column A + Column B + Column C)

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(Amount in Words)

\$

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(Amount in Figures)

If the Contract is to be awarded, Owner may award the Contract to the responsive, responsible, and eligible Bidder, offering the lowest **TOTAL 1 – Base Bid** price **OR** lowest **TOTAL 2 – Base Bid PLUS Alternate 1 Bid** price **OR** lowest **TOTAL 3 – Base Bid Plus Alternate 2 Bid** price **OR** lowest **TOTAL 4 – Base Bid PLUS Alternate 1 PLUS Alternate 2 Bid** price as selected at the sole discretion and best interest of the Owner.

Escalation/de escalation factor:

All prices shall be considered fixed for the contract duration, except for fuel, liquid asphalt, and Portland cement in accordance with MGL Chapter 30, Section 38A provided in Attachment II in Section 800-Supplementary Conditions.

The undersigned agrees that extra work, if any, will be performed in accordance with Article 10 of the General Conditions of the Contract and will be paid for in accordance with Article 11 of the General Conditions of the Contract.

A Labor and Material or Payment Bond in the amount of 100 percent of the total contract price must be provided by the general contractor. A Performance Bond in amount of 100 percent of the total contract price must be provided by the general contractor.

The bid security accompanying this BID shall be in the amount of 5 percent of the BID.

The bidding and award of the contract will be in full compliance with Section 39M (a) and (c) inclusive of Chapter 30 of the General Laws of the Commonwealth of Massachusetts as last revised.

If this BID is accepted by the Owner, the undersigned agrees to complete the entire work provided to be done under the Contract. The contract time to final completion is 180 calendar days. Liquidated damages specified in this contract are \$750 per day for each calendar day beyond completion date that work remains uncompleted.

The time period for holding bids, where Federal approval is not required is 30 days, Saturdays, Sundays and legal holidays excluded, after the opening of bids and where Federal approval is required, the time period for holding bids is 30 days, Saturdays, Sundays and holidays excluded after Federal approval.

As provided in the INSTRUCTIONS TO BIDDERS, the bidder hereby agrees that he will not withdraw this BID within thirty (30) days, excluding Saturdays, Sundays and legal holidays after the actual date of the opening of Bids and that, if the Owner shall accept this BID, the bidder will duly execute and acknowledge the AGREEMENT and furnish, duly executed and acknowledged, the required CONTRACT BONDS within ten (10) days after notification that the AGREEMENT and other Contract Documents are ready for signature.

Should the bidder fail to fulfill any of his agreements as hereinabove set forth, the Owner shall have the right to retain as liquidated damages the amount of the bid check or cash which shall become the Owner's property.

If a bid bond was given, it is agreed that the amount thereof shall be paid as liquidated damages to the Owner by the Surety.

This BID includes Addenda number \_\_\_\_\_ (To be filled in by Bidder if Addenda are issued.)

The bidder, by submittal of this BID, agrees with the Owner that the amount of the bid security deposited with this BID fairly and reasonably represents the amount of damages the Owner will suffer due to the failure of the bidder to fulfill his agreements as above provided.

The undersigned bidder certifies pursuant to M.G.L. Ch. 62C, Sec. 49A, under the penalties of perjury that I, to the best of my knowledge and belief, have filed all State tax returns and paid all State taxes required under law.

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work.

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individual.

(SEAL) \_\_\_\_\_ L.S.  
(Name of Bidder)

By \_\_\_\_\_  
(Signature and title of authorized representative  
and Federal Employer Identification No.)

\_\_\_\_\_  
(Telephone)

\_\_\_\_\_  
(Business address)

\_\_\_\_\_  
(Fax Number)

\_\_\_\_\_  
(City, State, Zip)

Date: \_\_\_\_\_



The bidder is a corporation incorporated in the State (or Commonwealth) of \_\_\_\_\_ - a partnership - an individual. (Bidder must add and delete as necessary to make this sentence read correctly.)

(Note: If the bidder is a corporation, affix corporate seal and give below the names of its president, treasurer, and general manager if any; if a partnership, give full names and residential addresses of all partners; and if an individual, give residential address if different from business address.)

The required names and addresses of all persons interested in the foregoing Bid, as Principals, are as follows:

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The bidder is requested to provide information on a minimum of three (3) projects similar to that included in the proposed Contract he has done and to give references that will enable the Owner to judge his experience, skill, and business standing.

<b>Project Name</b>	<b>Contact Name</b>	<b>Title</b>	<b>Telephone No.</b>

Add supplementary page if necessary.

## CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

---

(Name of person signing bid or proposal)

---

(Name of business)

## CERTIFICATE OF OSHA REQUIREMENTS

The undersigned certifies that this business can work in harmony with all other elements of labor employed or the employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins works and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that it will comply fully with all laws and regulations applicable to awards made subject to Section Forty-Four-A of Chapter 149 of the General Laws.

---

(Name of person signing bid or proposal)

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(Name of business)

### CERTIFICATION OF BID

Pursuant to M.G.L. Ch. 62C, §49A, I certify under the penalties of perjury that I, to my best knowledge and belief, have filed all state tax returns and paid all State Taxes Required under law.

The bidder by signing the bid, or contract, under penalties of perjury certifies (1) that he is able to furnish labor that can work in harmony with other elements of labor employed or to be employed on the work site; (2) that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and (3) that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration. Any employee found on a worksite subject to this section without documentation of successful completion of a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration shall be subject to immediate removal.

Ch. 30, §39 (a) The undersigned certifies under penalties of perjury that this bid is in all respects bonafide, fair and made without collusion or fraud with any other person. As use in this paragraph the "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

Certification undersigned is not presently debarred from doing public construction work in the Commonwealth of Massachusetts under the provision of Section Twenty-Nine-F of Chapter Twenty-Nine, or any other applicable debarment provisions of any other Chapter of the General Laws or any rule or regulation promulgated thereunder.

_____	_____
(Date)	(Name of General Bidder)
By: _____	
(Signature)	
_____	
(Printed Title & Name of person signing bid)	
_____	
(Business Address)	(City State, Zip)

END OF SECTION 00300A

## SECTION 02253

### STORMWATER TREATMENT DEVICES

#### PART 1 – GENERAL

##### 1.1 DESCRIPTION:

- A. This Section includes all labor, equipment, appliances, and materials required for construction of stormwater treatment device (SWTD) structures and stormwater treatment device (SWTD) inserts, complete and in place, in accordance with the Drawings and Specifications and as directed.

##### 1.2 RELATED WORK

- A. Division 1 - General Requirements
- B. Section 02210 – Earth Excavation, Backfill, Fill, and Grading
- C. Section 02590 – Brick Masonry
- D. Section 03300 – Concrete

##### 1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Section 01300 – SUBMITTAL PROCEDURES.
  - 1. Complete shop drawings for all precast concrete structures, cast iron frames and covers, interior baffle walls and weirs, and appurtenances.
  - 2. Prior to fabrication, submit shop drawings showing details of SWTD structure or insert including precast concrete structures, fiberglass or stainless steel components, stainless steel fasteners, joints and gaskets, construction details, tolerances, and other information as required by the Owner.
  - 3. Submit manufacturer's recommended installation procedures for informational purposes.

##### 1.4 QUALITY ASSURANCE

- A. Provide in accordance with Section 01400.

#### PART 2 – MANUFACTURER AND PERFORMANCE

##### 2.1 MANUFACTURER

Stormwater treatment device structures to be hydrodynamic separators capable of removing trash, floatables, 80% of total suspended solids, and petroleum hydrocarbons.  
Stormwater treatment device inserts to be capable of removing trash, floatables, 80% of

total suspended solids, and petroleum hydrocarbons. Manufacturers shall be ACF Environmental, Contech Engineered Solutions, or other approved equal providing the manufacturer has at least five (5) years experience with manufacture of stormwater treatment devices. Manufacturer and product submitted for consideration as approved equal must be approved by the local Conservation Commission as well as the Engineer.

## 2.2 PERFORMANCE AND PRODUCT

- A. Each Stormwater Treatment Device Structure shall be sized to treat runoff from impervious areas at a treatment flow rate of 2 cubic feet per second, storage for solids and oil sized appropriately for runoff from 6,400 square yards of impervious areas. Device shall be capable of removing 80% TSS (of mean particle size d50 of 125 microns) at treatment flow rate as well as 80% removal of petroleum hydrocarbons. Stormwater Treatment Devices shall be hydrodynamic separators with minimum storage depth of 2 feet for oils and 2 feet for solids, and shall be Hydroworks HG6 manufactured by ACF Environmental or CDS 2020-5-C manufactured by Contech or approved equal. Bypass shall allow flows for 25-year storm without disturbance of stored solids or oil.
- B. Stormwater Treatment Device Inserts shall be sized to treat runoff from impervious areas at a treatment flow rate of 0.25 cubic feet per second. Device insert shall be capable of removing 80% of TSS (of mean particle size OK85) at treatment flow rate as well as 80% removal of petroleum hydrocarbons. Inserts shall be StormPods manufactured by ACF Environmental (FABCO) or approved equal. Bypass shall allow flows of 1.75cfs.

## 2.3 MATERIALS

- A. Precast Bases and Risers: Except as otherwise indicated, precast reinforced concrete manhole bases and risers shall be 60 inches, 72 inches, or 96 inches, with flat tops in accordance with manufacturer's requirements, or as directed; manhole sections shall conform to the requirements of ASTM C478, latest revision, except as modified herein and/or on the drawings. Each manhole section shall be constructed with a bell-and-spigot or tongue-in-groove joint. The manhole sections shall be manufactured by the centrifugal, roller suspension or vertical cast process; workmanship and methods shall be in accordance with the best practices of modern shops for this type of work. The height and diameter of manhole bases shall be as required to accommodate size of pipe used, as approved. The manhole risers shall be available in 2, 3, and 4-foot lengths; manhole tops will be flat tops with 24-inch inside diameter opening at top, unless otherwise noted, as shown in the details; manhole tops of the flat slab type, where space restrictions exist or where directed, shall be not less than 8 inches thick and reinforced as indicated, and shall have an opening having an inside diameter as specified above.
- B. Frames and covers shall be heavy-duty Type A Massachusetts Standard and conform to the "Construction Standards" and "Standard Specifications for Highways and Bridges", of the Commonwealth of Massachusetts. All frames shall have a minimum clear opening of 24 inches or larger as required by SWTD manufacturer and shall be cast with name of product or manufacturer. Submit drawings to Owner for approval before fabrication. Iron castings shall be true to pattern in form and dimensions, free from pouring faults, sponginess, cracks, blow-holes and other defects affecting the strength and value for the service intended. The finished coating shall be tough and tenacious when cold and not brittle or with any tendency to scale off under seasonable temperature changes.

- C. Jointing: Ends of each length of manhole riser, the bottom end of manhole tops of the cone type, base slabs, and the tops of monolithic bases shall be provided with bell-and-spigot or tongue-and-groove ends of concrete formed on machined rings to insure accurate joint surfaces. Jointing shall be O-ring gaskets or butyl rubber molded sealants. All joints shall be provided so as to be watertight under all conditions of service. The ends of base, riser, and cone sections to be jointed using neoprene "O-ring" type joints shall be designed to enclose the gasket on four surfaces when the joint is in its final position.
- D. Gaskets for sealing joints using the "O-ring" type gaskets shall conform to ASTM C443, latest revision, and shall be of rubber of a special composition having a texture to assure a watertight and permanent seal and shall be the product of a manufacturer having at least five years experience in the manufacture of neoprene gaskets for pipe joints, or shall be vulcanized butyl rubber sealants meeting or exceeding Federal Specifications SS-S-210, latest issue. G. Concrete: The concrete for precast manhole sections shall have an average strength of not less than 4,000 psi at 28 days. Strength shall be determined by tests on 6-inch by 12-inch vibrated test cylinders cured in the same manner as the manhole sections, cores cut from the manhole sections, or by other approved methods. Not less than two concrete strength tests shall be made for each 100 linear feet of manhole sections and the test results submitted to the Owner. Testing may be conducted at the manufacturer's plant or at an approved testing laboratory and shall be the responsibility of the Contractor, at no additional expense to the Owner.
  - 1. Cement shall be moderate heat-of-hydration Portland cement conforming to ASTM C150, latest revision, Type II.
  - 2. Absorption, determined by absorption test described in ASTM C478, latest revision, shall not exceed 8 percent of dry weight.
- E. Mortar (grout), for sealing mortar-type joints or grouting field made pipe openings, shall be a non-shrink type mortar or grout which shall be a factory-mixed ready-to-use product containing especially prepared aggregate, cement and sand and other components which will produce a mortar or grout with properties to counteract shrinkage, increase density, withstand impact, improve workability, produce watertight joints, and which will be suitable for jointing around pipes entering manholes.

### PART 3 – EXECUTION

- 3.1 Inspection: Acceptance of precast reinforced concrete manhole sections will be made on the basis of plant tests, material tests, and inspection of the completed product, in accordance with the requirements of ASTM C478, latest revision, with the following modifications.
  - A. Manhole sections shall not be shipped for at least five days after manufacture when cured by subjecting them to thoroughly saturated steam at a temperature between 100 and 150 degrees F for a period of not less than 8 hours, or when necessary, for such additional time as may be required to enable the manhole sections to meet specification requirements.
  - B. All manhole sections will be inspected upon delivery; manhole sections which do not



conform to specification requirements will be rejected and shall be removed immediately from the site by the Contractor. Furnish all labor and facilities necessary to assist the Owner in inspecting the material.

- C. All manhole sections which have been damaged after delivery, and manhole sections installed in the work which are found to be damaged will be rejected and shall be removed and replaced by the Contractor with new, sound and approved material, at no additional expense to the Owner. At the time of inspection, the surfaces of the sections shall be dense and close-textured. Cores shall serve as a basis for rejection of manhole sections if poor bond or reinforcement is exposed.
- D. The quality of all materials, processes of manufacture, and the finished manhole sections shall be subject to inspection and approval of the Owner. Such inspection may be made at the place of manufacture and/or on the site, and the manhole sections shall be subject to rejection at any time because of failure to meet any of the specification requirements, even though sample manhole sections may have been accepted as satisfactory.

### 3.2 HANDLING

- A. Each manhole section shall be handled into its position in the trench only in such manner and by such means as recommended by the manufacturer of the concrete structure, and as approved. Provide all necessary slings, straps and other devices for the safe and satisfactory handling and support of the manhole sections during lifting, installation and final positioning of the sections. Lifting holes may be permitted provided suitable rubber or concrete stopper or other approved devices are provided for plugging and sealing the holes and watertight, all as approved.

### 3.3 INSTALLATION

- A. Installation, startup, and testing shall be completed in accordance with manufacturer's requirements. Contractor to provide detailed manufacturer's requirements for review prior to beginning construction.

### 3.4 TESTING FOR EXFILTRATION

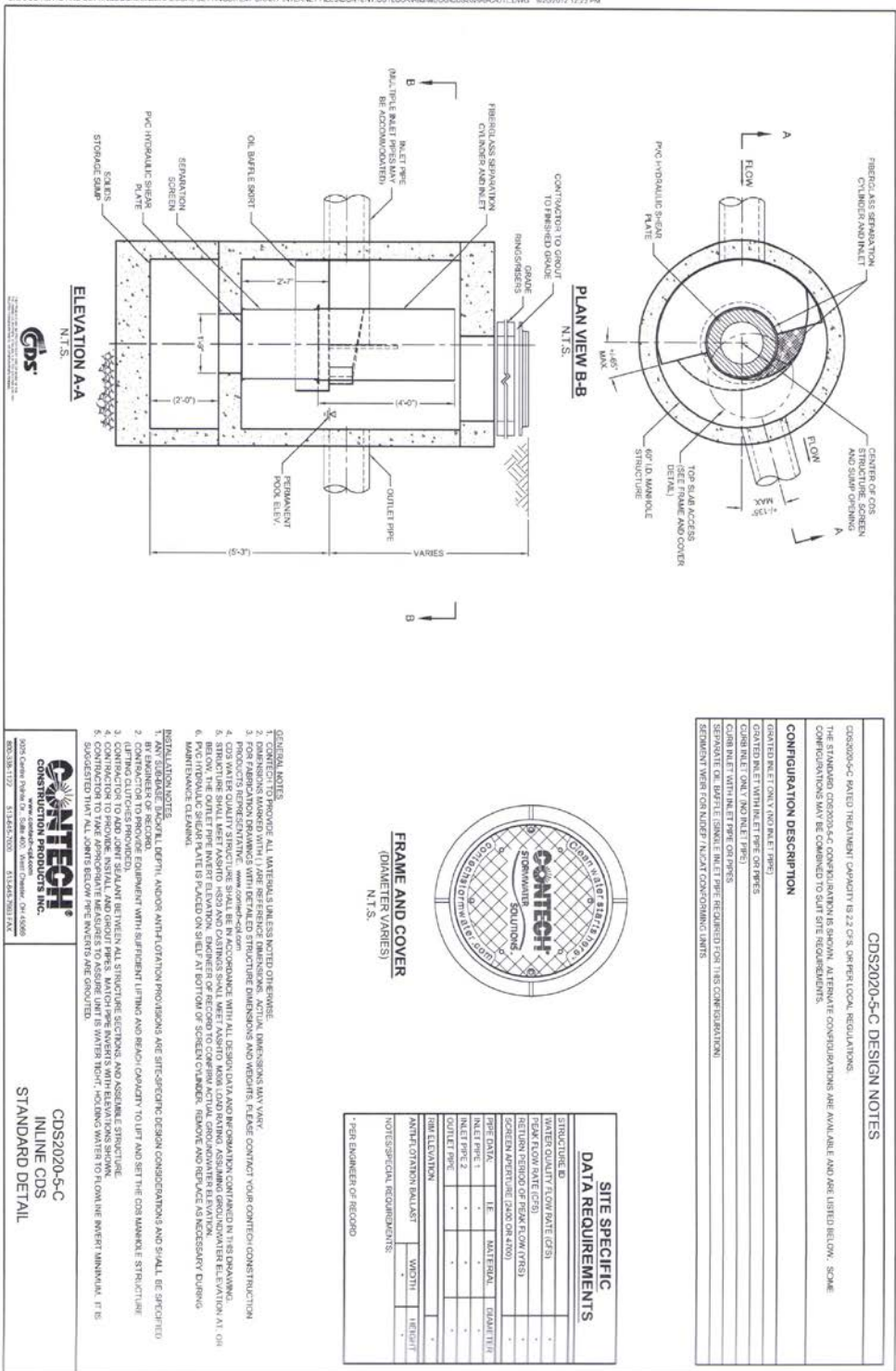
- A. Testing for leakage and exfiltration shall be completed in accordance with manufacturer's requirements. Contractor to provide detailed manufacturer's requirements for review prior to beginning construction.

### 3.5 BACKFILLING

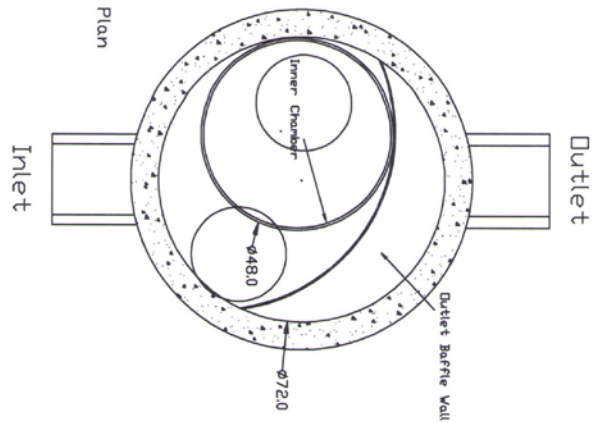
- A. General: Conduct backfill operations of open cut trenches closely following laying, jointing, and bedding of pipe, and after initial inspection and testing are completed, all in accordance with Section 02210 – EARTH EXCAVATION, BACKFILL, FILL, AND GRADING.

### 3.6 CONTRACT CLOSEOUT

- A. Provide in accordance with Section 01700 - CONTRACT CLOSEOUT



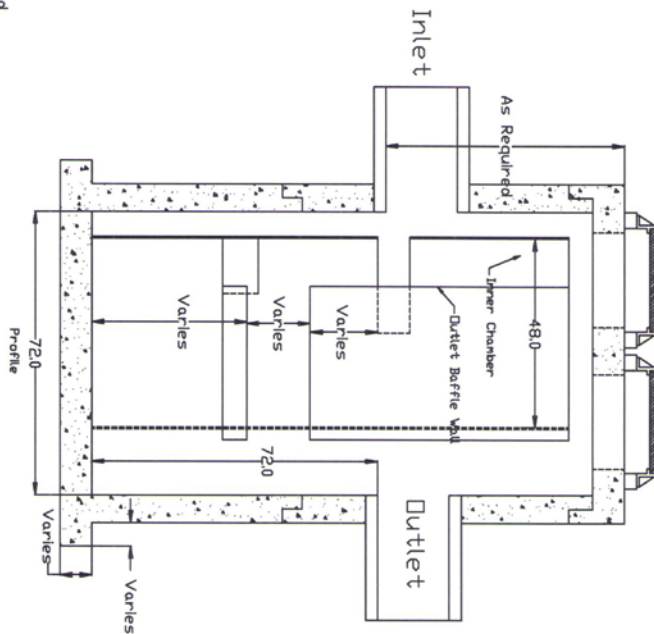
Generic Product Information for Reference.



U.S. Patent No. 6,951,619

Dimensions in Inches  
 Permanent Pool Volume = 1250 US gallons  
 The Hydroguard must be cleaned after the construction period if it is used as a sediment and erosion control measure  
 The Hydroguard should be inspected once per year for stabilized sites  
 Inspection will determine the maintenance frequency (annual maintenance or once every two years typical for stabilized sites) with unstable conditions (exposed soil or materials storage) will require more frequent inspection and maintenance

Hydroworks, LLC  
 50 S. 21st St., Kenilworth, NJ 07033  
 Phone: 888-290-7900 Fax: 888-783-7271  
 Web: www.hydroworks.com



Hydroworks HG6 (72" $\phi$ )	
PROJECT:	
LOCATION:	
REVISION DATE:	02/10/2011



Generic Product Information for Reference.



STORMWATER TREATMENT DEVICES  
02253-7